

What is claimed as new and desired to be protected by Letters Patent  
of the United States is:

1. A wireless data communications system comprising:

an array of antenna elements for transmitting and/or receiving a  
5 narrow, high gain beam with respect to a mobile unit;

a beamformer for forming said narrow, high gain beam;

a radio resource controller coupled to said beamformer for  
determining and allocating radio resources; and

a detector element for detecting data characteristics associated with  
10 said mobile unit, said detector element being operatively coupled to said  
radio resource controller.

2. The system of claim 1, wherein said detector element  
comprises a signal-to-noise ratio detector for detecting a signal-to-noise ratio  
of a connection between said antenna element and said mobile unit.

3. The system of claim 1, wherein said detector element comprises a mobile position locator for locating the position of said mobile unit.

4. The system of claim 1 further comprising a transmitter for transmitting forward link data communications to said mobile unit.

5. The system of claim 1 further comprising a receiver for receiving reverse link data communications from said mobile unit.

6. The system of claim 1, wherein said array of antenna elements is an adaptive antenna array.

7. The system of claim 1, wherein said array of antenna elements is a switched beam antenna array.

8. The system of claim 1 further comprising a processor for processing signals received from said mobile unit.

9. A terrestrial base station for wirelessly communicating with a plurality of mobile units, said base station comprising:

a forward link portion for transmitting data to said mobile units; and  
a reverse link portion for receiving data from said mobile units,  
wherein at least one of said forward and reverse link portions form a narrow,  
high gain beam.



5            10.    The base station of claim 9 further comprising a radio resource  
controller for determining and allocating radio resources.

10           11.    The base station of claim 10 further comprising a mobile  
position locator coupled to said radio resource controller for locating a  
mobile unit with which the base station is communicating, wherein said base  
station is capable of steering said beam such that it is coupled to said mobile  
unit as said mobile unit changes its location.

15           12.    The base station of claim 10 further comprising a data rate  
detector coupled to said radio resource controller for detecting a data rate  
required for communicating with said mobile unit, wherein said base station  
is capable of modifying said beam based upon said detected data rate.

13.    The base station of claim 10 further comprising a signal-to-  
noise ratio detector coupled to said radio resource controller for detecting a

signal-to-noise ratio, wherein said base station is capable of modifying said beam based upon said detected signal-to-noise ratio.

14. A wireless communications unit comprising:

a forward link portion for receiving data transmitted from a terrestrial  
5 base station; and

a reverse link portion for transmitting data to said terrestrial base  
station, wherein at least one of said forward and reverse link portions form a  
narrow, high gain beam.

15. The communications unit of claim 14 further comprising an  
10 antenna element for said beam.

16. The communications unit of claim 14 further comprising a  
beamformer for forming said beam.

17. The communications unit of claim 16 further comprising a  
radio resource controller coupled to said beamformer for determining and  
15 allocating radio resources.

18. The communications unit of claim 17 further comprising a mobile position locator coupled to said radio resource controller for locating a position of said communications unit.

19. The communications unit of claim 17 further comprising a data rate detector coupled to said radio resource controller for detecting a data rate of received data.

20. The communications unit of claim 17 further comprising a signal-to-noise ratio detector coupled to said radio resource controller for detecting a signal-to-noise ratio of a connection between said unit and said base station.

21. The communications unit of claim 17 further comprising a transmitter for transmitting reverse link data communications from said unit to said base station.

22. A method of wirelessly communicating data between a terrestrial base station and a mobile unit, comprising:  
forming a beam at said base station based on detected data characteristics associated with said mobile unit; and

transmitting said beam toward said mobile unit.

23. The method of claim 22 further comprising modifying the characteristics of said beam in response to said detected data characteristics.

24. The method of claim 23 further comprising detecting a  
5 location of said mobile unit relative to said base station.

25. The method of claim 24, wherein said location is detected at said mobile unit.

26. The method of claim 24, wherein said detected data characteristics include a data rate.

10 27. The method of claim 24 further comprising changing the characteristics of said beam based upon signal-to-noise ratio data.

28. The method of claim 24 further comprising downloading a data file from an Internet server.

15 29. The method of claim 24 further comprising uploading a data file from said mobile unit to an Internet server.

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